MP100274 A-US

Declaration under 37 CFR 1.132 with regard to US utility patent application number 10/675,138

I, Alan Reginald Minihan, a British subject of 18 Green Lane, Wallasey, Merseyside, U.K. declare the following:

1. I hold the degree of D. Phil. in Chemistry from University of Oxford and the degree of Master of Arts from University of Oxford. I am a Chartered Chemist and a member of the Royal Society of Chemistry.

2. I am presently employed as Group Product Development Manager by Ineos Silicas Limited, Bank Quay, Warrington, UK and have worked for a total of 21 years on the chemistry and structure of inorganic chemicals for Unilever plc, Crosfield Ltd, and Ineos Silicas Ltd.

3. The research work detailed below was carried out as part of a joint BRITE (EU-sponsored) research project (no F14W-CT95-0016) between British Nuclear Fuels Ltd. (UK), Crosfield Ltd. (UK), IVO International (Finland), University of Helsinki (Finland) University of Salford (UK) between 1st January 1996 and 31st December 1998. The table of data, Table 26, annexed to this document is from the final report detailing the work carried out in the project.

4. Crosfield ltd. changed its name to Ineos Silicas ltd. on 13th March 2001.

5. Table 26, which is annexed to this document, shows the distribution coefficients (Kd) for various isotopes in acid solution for tungsten (W)-doped antimony silicates (WSS – samples HMS18) in comparison to antimony silicate (HMS10) and titanium (Ti) doped antimony silicate (HMS19). Description of the preparation of the materials tested is also included in table 26.

6. From the comparative data presented in the table it can be seen that the tungsten doped antimony silicates give much higher values for Kd (e.g 702, 8182, 14251-18303 for HMS18a1; i.e. good extraction behaviour) in comparison to the Kd values obtained for the titanium-doped antimony silicate (22, 187, 1.06). It is believed that the test results indicated herein are representative of the testing program, even though there may be other tests, not included herein, that may have been conducted in the time frame of the program.

7. From these data it was concluded that Ti was an undesirable dopant for antimony silicate to be used for extraction of radioactive metals from acid solution and work on this dopant was not progressed.

8. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

09 May 2006

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Signature.....

Date.....09 May 2006.....

Name Alan Reginald Minihan

Table 26. Distribution coefficients (Kd) for W doped antimony silicates

	Sample name	Starting materials	Starting Sb:Si:W ratio	Preparation method	XRD trace	^{134}Cs Kd [ml/g] in 0.1 M HNO_3	^{85}Sr Kd [ml/g] in 0.1 M HNO_3	^{57}Co Kd [ml/g] in 0.1 M HNO_3
1	HMS12 (KSS)	$KSb(OH)_6$, TEOS, HNO_3	1:1 (weighed)	1% mixture at 77C, overnight	Amorphous	590	19660	1959
2	HMS10 (SbSi)	$SbCl_5$ in 4 M HCl, $Na_2Si_3O_7$ (Fluka)	1:1 (0.1 M solutions)	1% mixture at 77C overnight	Crystalline (as antimonic acid)	1354-3702	35515-102700	1509-4282
	TiSS							
3	HMS19	HMS10+$TiCl_4$	1:1:0.61 (sol)	at 60C, 1d	Amorphous	22	187	1.06
	MoSS							
4	HMS17a1	HMS12 + $NH_4(MoO_3)_2$	1:1:1 (weigh.)	at 77C, 3 days	Crystalline, AMP?	400	363	285
5	HMS17a2	HMS12 + $NH_4(MoO_3)_2$	1:1:0.2 (weigh)	-"-	Amorphous	472	2012	2012
6	HMS17c1	HMS10 + $NH_4(MoO_3)_2$	1:1:1:1 (sol)	at 77C, 2 days	Amorphous	118	141	75
7	HMS17c2	HMS10 + $NH_4(MoO_3)_2$	1:2.5:1.7 (sol)	at 77C, overnight	Amorphous	220	199	116
8	HMS17c3	HMS10 + $NH_4(MoO_3)_2$	1:2.5:0.5 (sol)	-"-	Amorphous	205	118	60
	WSS							
3	HMS18a1	HMS12 +Na_2WO_4*$2H_2O$	1:1:0.5 (weigh.)	1% mixture at 77C	Amorphous	702	8182	14251-18303
4	HMS18a1d	HMS12 +Na_2WO_4*$2H_2O$	1:1:0.5 (weigh.)	let to dry at 77C	Amorphous	670	8918	1320
5	HMS18a2	HMS12 +Na_2WO_4*$2H_2O$	1:1:1 (weigh.)	at 77C overnight	Amorphous	272	2489	251
6	HMS18a3	HMS12 +Na_2WO_4*$2H_2O$	1:1:2 (weigh.)	-"-	Cryst. Unknown	85.8 (dissolves)	282 (dissolves)	48.3 (dissolves)
7	HMS18a4d	HMS12 +Na_2WO_4*$2H_2O$	1:1:0.1 (weigh.)	let to dry at 77C	Amorphous	1332	41382	1762
8	HMS18c1	HMS10 +Na_2WO_4*$2H_2O$	1:1:1 (weigh.)	20h at 77C	Semicryst. SbSi	10652	3252	859

9	HMS18c2	HMS10 +Na_2WO_4*$2H_2O$	1:1:1 (weigh.)	2 days at 77C	Cryst. SbSi	14441	4608	1552
10	HMS18c2d	HMS10 +Na_2WO_4*$2H_2O$	1:1:1 (weigh.)	let to dry at 77C	Cryst. SbSi	17188	35499	1515
11	HMS18c3	HMS10 +Na_2WO_4*$2H_2O$	0.5:1:1 (weigh.)	2 days at 77C	Cryst. SbSi	17745	5637	224
12	HMS18c3d	HMS10 +Na_2WO_4*$2H_2O$	0.5:1:1 (weigh.)	let to dry at 77C	Cryst. SbSi	20970	8075	640
13	HMS18c4	HMS10 +Na_2WO_4*$2H_2O$	1:2.5:1 (sol)	1 d at 77C	Cryst. SbSi	15356	9651	611
14	HMS18c5	HMS10 +Na_2WO_4*$2H_2O$	1:2.5:0.5 (sol)	-"-	Cryst. SbSi	7008	9492	1101
15	HMS18c6*	HMS10 +Na_2WO_4*$2H_2O$	1:1:0.5 (weigh.)	-"-	Cryst. SbSi	18697	42151	1440
16	HMS18c7d	HMS10 +Na_2WO_4*$2H_2O$	1:2.5:1.7 (sol)	let to dry at 77C	Cryst. SbSi	6924	5221	289
17	HMS18c8	HMS10 +Na_2WO_4*$2H_2O$	1:2.5:1.7 (sol)	1 d at 77C	Cryst. SbSi (int?).	3142	435	76.4